

## The Adults of *Oroperla barbara* (Needham)

(Plecoptera: Perlodidae)

C.A. Siegfried, P.J. Sheehan and A.W. Knight

Hydrobiology Laboratory, Department of Land, Air and Water Resources

University of California, Davis 95616

It has been over 40 years since the appearance of the description of the nymph of this unique stonefly with lateral abdominal gills (Needham, 1933). In that time only the adult male has been collected and described (Jewett, 1966). Below is a description of the adult female and the egg of *Oroperla barbara*. The drawings of the nymphs were made by Penelope Kellar and Adele Hipps, and that of the egg by Kathleen Jevons.

In March 1974 live *Oroperla* nymphs were collected from two N. California locations on the Yuba River (T17N:R12E:S24). The nymphs were maintained in a constant-temperature water bath at ambient temperature ( 6°C) for the first two weeks after capture, after which the temperature was increased about two degrees each week. The nymphs were fed tubifex worms while in captivity.

As usual among the Plecoptera, males preceded females in emergence. The first male emerged 10 April and the first females attempted to emerge 26 April although none emerged successfully until 5 May. Emergence was complete by 15 May. We succeeded in rearing 10 males and 4 females, while 2 additional females died during emergence. No other deaths occurred during the rearing process.

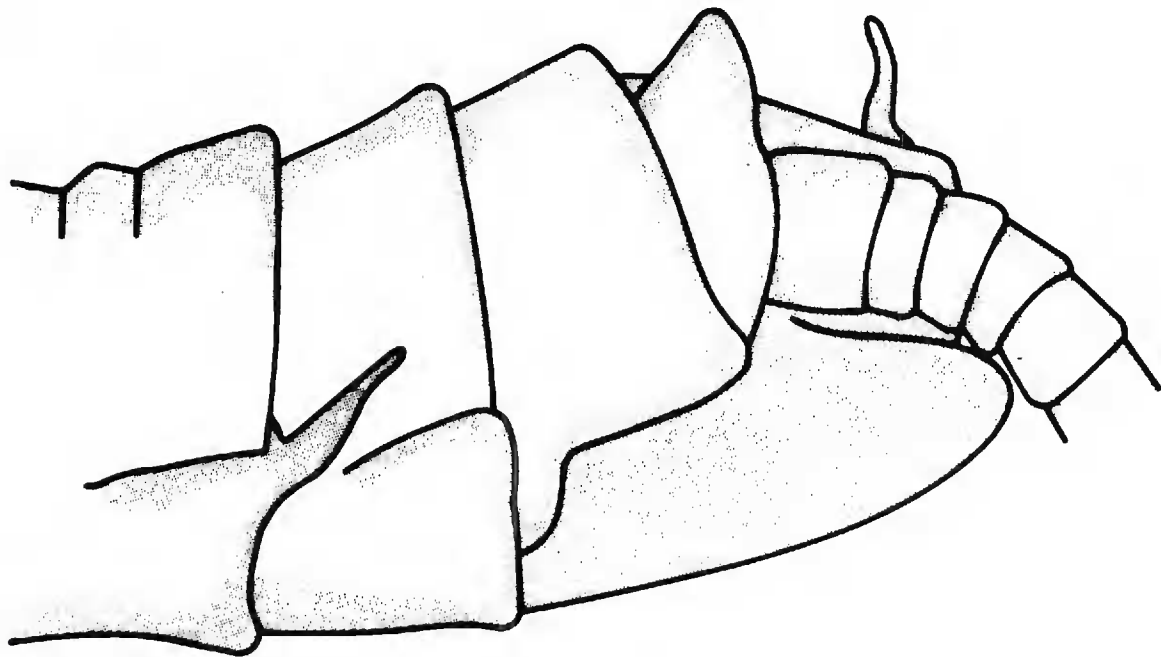


Fig. 1. Lateral view of male terminal abdominal segments.

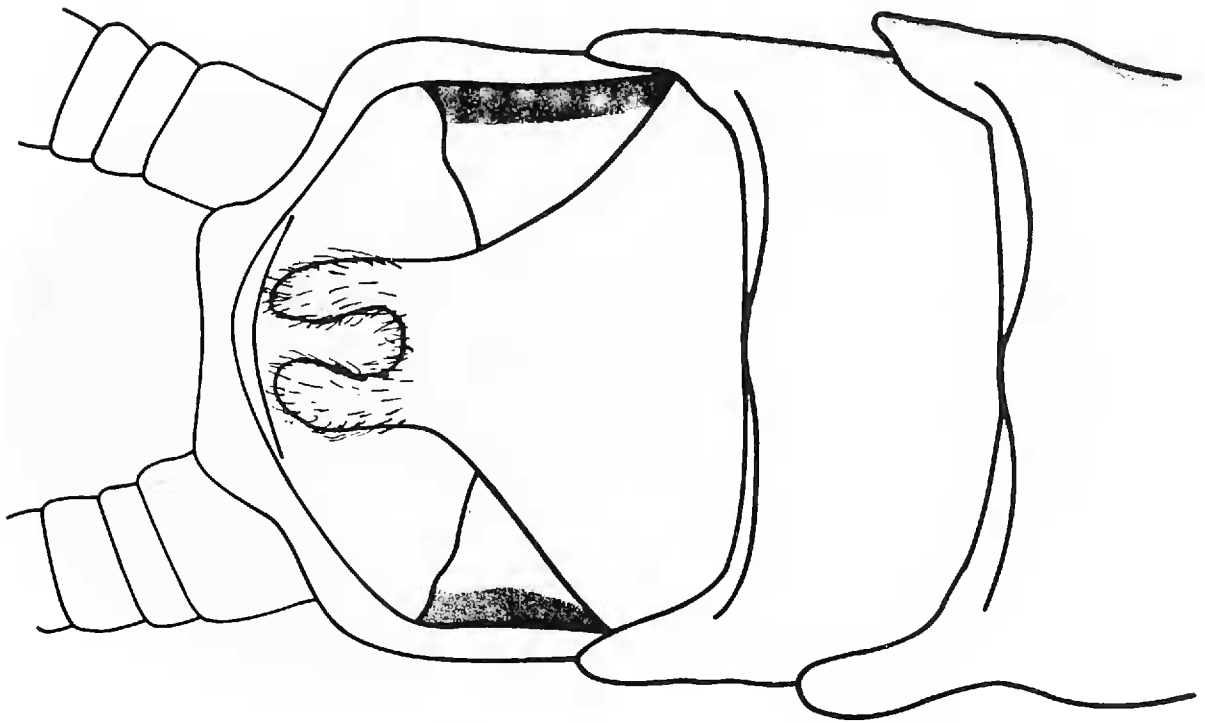


Fig. 2. Ventral view of female terminal abdominal segments.

The adults mated readily in the laboratory.

Our observations of the male coloration agree with the description by Jewett (1966). Observations of 10 males reared in our laboratory, however, did not reveal the sharp bend in the distal third of the epiproct described in Jewett (1966). Instead, the epiprocts of all males examined in our laboratory were smoothly curved anteriorly in the distal third rather than sharply bent posteriorly (Fig. 1). The difference between our specimens and that of Jewett (1966) in shape of the epiprocts cannot be accounted for unless our specimens were somewhat teneral or Jewett's was abnormal in the direction of the tip of this structure (S. G. Jewett, personal communication). The latter explanation probably is the case since our specimens were observed mating and some were kept alive as long as two weeks after emerging, more than ample time to develop mature genitalia.

**FEMALE** — Length to wing tip, 27mm. Length of body, 220mm. Length of antennae, 16mm. Length of cerci, 14mm. Head capsule width, 5mm. Coloration and gill location as in male (Jewett, 1966). Subgenital plate approaches tip of tergite of ninth abdominal segment (Fig. 2). Proximal  $\frac{2}{3}$  of genital plate triangular, narrowing to about  $\frac{1}{3}$  its basal width. Distal  $\frac{1}{3}$  slightly longer than wide, with deep U-shaped notch medially. Notch about  $\frac{1}{5}$  length of genital plate in depth. Genital plate coloration pale, dull yellow, somewhat darker in distal third.

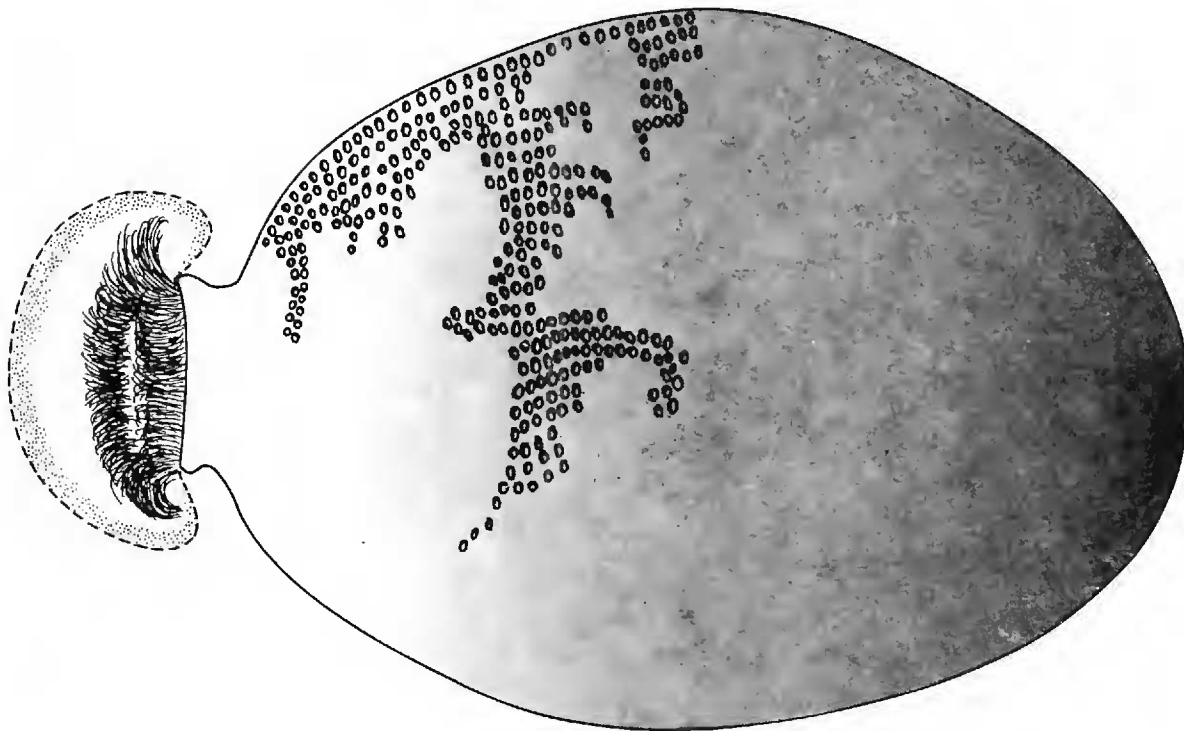


Fig. 3. Lateral view of mature egg.

The dark honey-colored eggs were generally oval in shape, about  $630\mu$  long and  $430\mu$  wide, with a collar (Fig. 3). The surface was covered with a series of oval indentations. One female mated and laid 209 eggs. The two mature female nymphs that died at emergence contained 492 and 284 eggs.

Although all the above individuals were from the Yuba River, nymphs of *Oroperla barbara* also have been collected from Miller Creek (Jewett, 1966), a tributary of the American River, from the American River itself, and from Indian Creek, Plumas County, California (T25N:R11E:S8) by the authors.

#### Literature Cited

- Jewett, S. G. 1966. Notes on *Arcynopteryx (Oroperla) barbara* Needham (Plecoptera). Pan. Pac. Ento. 42:175-177.
- Needham, J. G. 1933. A stonefly with paired lateral abdominal appendages. Jour. Ento. and Zool. 25:17-19.